First breeding data for Roraiman Nightjar *Caprimulgus whitelyi*, from south-east Venezuela

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SUMMARY.—Observations were made at a nest of the poorly known Roraiman Nightjar *Caprimulgus whitelyi*, in bushy savanna at 885 m elevation, near El Paují in the southern Gran Sabana, Venezuela, from 14 days prior to hatching on 16 March 2008, until the fledgling and adults vacated the site. I present the first description of the nest, single white egg, chick and fledgling, as well as notes concerning the identification and behaviour of the adults and juvenile. Both adults incubated and tended the young. The fledgling became active and relocated from a nearby day roost to the nest just before the first of several feeding visits by the adults after dark, greeting their arrival with begging 'warbles'. Otherwise, the birds hardly vocalised at all during the entire period.

Roraiman Nightjar *Caprimulgus whitelyi* is a rare, local and poorly known species (e.g. Cleere 1998, 1999, Hilty 2003, Restall *et al.* 2006). No information on its behaviour is available. A recent molecular study (Han 2006) suggested that *C. whitelyi* is not closely related to any other *Caprimulgus*. Endemic to the Pantepui with records from forested slopes and upper levels of the southern tepuis of Venezuela (Hilty 2003), including Cerro Urutaní on the frontier with Brazil (Dickerman & Phelps 1982, Naka *et al.* 2006), at 1,280–1,800 m, it has more recently been found in bushy savanna near forest, at *c.*850 m, in Las Agallas in the southern Gran Sabana of Venezuela (D. Ascanio *in litt.* 2008) and near Kopinang in central-west Guyana (O'Shea *et al.* 2007). For seven weeks in March / April 2008, I made daily observations of *C. whitelyi* breeding at a site <1 km south of El Paují (04°28'N, 61°35'W) in the southern Gran Sabana. Most of my observations were made in daylight.

Initial discovery

The presence of Roraiman Nightjars was drawn to my attention by A. Rønnevik, the owner of a nearby house, who first saw them in March 2007. Due to travel commitments, I was only able to make brief observations of an adult male (Fig. 1) and just-fledged juvenile. On my return in early May, they were no longer present, but on 2 March 2008, a pair was back in exactly the same place and was found to be incubating an egg.

Breeding site and habitat

El Paují village lies within an irregular strip of savanna, 3–6 km wide by *c.*60 km long, with a maximum elevation of 1,050 m, surrounded by forest. The breeding site lies between gallery forest and the village airstrip, *c.*250 m further south, at 885 m. Shallow sandy soil of variable depth covers sandstone rock and supports a mosaic of grass, in stiff clumps, and bushes up to 3 m tall, mostly *Bonnetia sessilis* (Bonnetiaceae), which is common in the area to 2,200 m (P. Perret *in litt.* 2008). The airstrip and the dirt road from the village to the strip protect the breeding site from occasional savanna fires. The egg was laid *c.*40 cm to the east of the base of a relatively old *Bonnetia sessilis* comprising *c.*100 thin stems emerging from a wide base. The root mass is raised above puddles that form during heavy rain, whilst the bush and its broad base afford shade from midday to sunset, and protection against intru-

sion from the west. The single egg was placed immediately adjacent to a *c.*30 cm patch of white quartzite stones, perhaps for camouflage. Dead *Bonnetia* leaves and twigs were scattered throughout, sometimes forming small banks. No nest was constructed, not even by removing larger debris from the area where the egg was laid, and the egg was in fact moved around within a radius of 10+ cm. To the east was a *c.*10-m clear area with a low bush on its far side with protruding dead branches used by the nightjars when approaching the site. A surprising feature is the site's proximity to two houses, one at *c.*80 m and the other *c.*200 m distant, with attendant noise and domestic animals.

Identification notes

The continuous presence of the adults during seven weeks permitted ample opportunity to study and photograph both them and the juvenile, at rest and in daylight. Although good descriptions are available (Cleere 1999, Hilty 2003, Restall *et al.* 2006), I offer a few additional characteristics based on my observations. Although the base colour of *C.whitelyi* is considered near black based on museum specimens, even darker than *C. nigrescens* (N. Cleere *in litt.* 2008), in the field the apparent colour varies from near black to brown, depending on the lighting and as shown by comparison of Figs. 2 and 3. When the adults are alert, the head is lifted and the neck feathers are raised revealing the collar, which is more prominent (Figs. 1–2) than described in the literature. The large pale tips to the male's wing-coverts appear to be arrayed in four 'curved' lines, suggesting a fourth set of coverts (Fig. 2). No other dark nightjar in range has uniform buff undertail-coverts. This feature, which is present in both sexes and even in fledglings (Fig. 1), is therefore diagnostic. On the ground, the buff sides to the undertail-coverts can be seen when the bird perches (Fig. 2). The white spots on the inner webs of the second and third rectrices are noticeable on perched birds from below (Fig. 1), and occasionally from above when the rectrices are fanned (Fig. 4) or displaced.

Egg

The single all-white egg measured 27.5 mm × 21.0 mm and was only slightly blunter at one end (Fig. 3). Some indistinct, small, pale brown spots of somewhat variable size, sparsely scattered over most of the surface, proved to be marks from ground contact (being removable by washing) rather than pigmentation.

Incubation rhythms

Both adults incubated the egg. Despite carefully searching for the second adult near the nest, I never saw one; it presumably spends the day roosting some distance away. The nest was visited several times on some days and the same bird was always present during daylight on any given day. In fact, daytime incubation shifts were three or more days long, as follows: male: 3; female: 5; male: 3; female: 3+ (hatching occurred on the third day and the female tended the chick for some days more). The 'on-duty' adult appears to take up position shortly before dawn. Once, at 05.20 h, before there was enough light to see, flight noise was heard from the vicinity. On another day, the egg was found unattended at 05.31 h, but the male arrived and commenced incubation within <2 minutes. This was the only time in 20 visits that the egg was found uncovered.

Response to disturbance

The incubating adult appears, in general, to remain completely immobile throughout the day, with eyes closed. The only response to quiet approach was to progressively open

the eyes wider, from a slit when the observer was 10 m away, to almost round at 1 m. No type of threat behaviour was adopted, except by the female, which raised its wings and revealed the huge pink gape when I collected the eggshell halves soon after hatching. If flushed, the adult usually flew *c.*8 m, to an area north-east of the nest, near a line of bushes. On alighting, it would tilt forward and extend the wings briefly, apparently feigning injury, and occasionally emit a low, soft warble, the throat visibly vibrating as it did so. On my withdrawing a few metres, the bird would soon walk laboriously back to the egg (Fig. 2), with occasional rests. Once an adult made a short flight when returning, but landed *c.*1 m away and made the final approach on foot (Fig. 3).

Hatchling

Hatching occurred on 16 March 2008, probably around 10.30 h, on a dry morning. The semi-altricial hatchling was found, with the female (Fig. 4) close by, at 11.20 h, covered in white down, still damp with amniotic fluid (Fig. 5). The eyes were not seen to open during this first visit. On day 4 (after hatching), the hatchling had its eyes open after I flushed the female, which had been brooding it during preceding visits in the intervening period.

Chick growth

The female was found brooding the chick on all visits subsequent to the first, until day 6. On day 7, ten minutes after a rain shower, the female was found *c.*30 cm from the chick. The female continued in daytime attendance until day 8, the male on days 9–14, sometimes brooding, sometimes not (Fig. 6). On day 14 the chick had moved *c.*1 m from the nest. On day 15, the chick was found with the female *c.*5 m west of the bush, in an area of younger, thinner *Bonnetia sessilis* bushes, which the chick continued to frequent on most subsequent days. On day 16, the male was back in attendance and remained so until day 29. On days 18–19, the by now quite large chick was found under the male's wing, facing rearwards. Day 19 was the last on which I observed the male brooding the chick. Thereafter, the birds were found separated by just a few cm or up to 5 m, at the base of the original bush or under the thinner bushes to the north-west. It is noteworthy that the shared attention to the egg and chick by both adults differs from the behaviour of some other Neotropical nightjars, e.g., Pauraque *Nyctidromus albicollis*, Blackish Nightjar *Caprimulgus nigrescens* (J. Ingels *in litt.* 2008) and Lyre-tailed Nightjar *Uropsalis lyra* (Greeney & Wetherwax 2005).

From day 30, the chick spent the day alone on the ground, mostly among the thinner bushes, with no sign of the adults. On days 32–35, I made observations of the fledgling and adults immediately after nightfall as follows.

Day 32.—On approaching the site at 17.12 h, I inadvertently flushed the fledgling, which made a short (*c.*7 m) flight to the nest. As the flight was controlled and direct, it is probable that the adults left the young alone during the day only after it could fly. This would place fledging prior to day 30 and perhaps well before as, for example, fledging at day 14 is reported for *Caprimulgus nigrescens* (Cleere 1998). On landing the young resumed its usual, immobile, daytime position. At *c.*17.35 h, just before sunset, but with less light than normal due to heavy cloud cover, the young suddenly became much more active, moving the eyes and eyelids, producing a 'nibbling' action of the bill, rapidly twisting the entire head (apparently tracking flying insects), head-bobbing, 'yawning', sideways rocking and wing-stretching. Once it shuffled to a bank of dead leaves, recently wetted by rain, and spent several minutes taking them deeply into its gape, then 'spitting' them out, presumably to obtain water. When inclining forward to select leaves, I noticed that the undertail-coverts were already buff like the adults.


1


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At *c.*18.00 h, the male, identified by the relatively long tail spots, fluttered *c.*3 m above the fledgling and uttered two short bouts of 3–4, rather chicken-like, whistled *cheeps*, the first vocalisations I had heard from the birds. The fledgling responded with soft warbles, initially inaudible and only evidenced by the vibrating throat, but becoming clearly audible when an adult approached closely. As direct torchlight appeared to cause the fledgling to revert to its inactive daytime mode, I shifted the beam slightly away from the bird, whereupon it became very active, stretching the wings and, during a low pass by an adult, taking laboriously off almost vertically upwards, moth-like, with the wings held high and beating rapidly, to *c.*2.5 m, before descending to a rather 'uncontrolled' landing on a grass tuft. While airborne, the adult circled buoyantly around it, apparently providing encouragement. The adult was evidently keen to deliver food, but was unwilling to do so because of the light and my presence. The young then made another take-off in my direction but the adult appeared and seemed to 'steer' it to a landing *c.*10 m away, behind a bush. Here the adult landed beside it and commenced feeding. My observations then ceased for the night.

Day 33.—I approached the site 17 minutes before sunset and again flushed the fledgling before seeing it. This time the young flew *c.*25 m and, after I flushed it again, flew back to *c.*10 m north-west of the nest. At 21 minutes after sunset, but with considerably more light than on day 32, the fledgling became more active, behaving similarly to the day before. Four minutes later, it stood up, defecated, wing-stretched and head-bobbed, and then flew to the nest. At 37 minutes after sunset, an adult, probably the female as no obvious white was detected, flew over. The young responded with soft warbles. A few minutes later, it made a short hop onto a small rock, an adult flew over and the young followed it into the air and away through the tops of the nearest bushes and out of sight (in moth-like, hovering flight). On days 32–33, my presence clearly altered the usual pattern of feeding, which would presumably be for the adult to feed the young at the nest.

Day 34.—This night I hung my recorder from the bush above the nest before sunset and switched it on. Visibility was unusually good due to the absence of cloud and a near-full moon, and I could remain further away, *c.*10 m from the nest, and still observe some detail without torchlight. The young was alone at the same location as on day 33. Thirteen minutes after sunset, the young became active, stood, defecated, started walking toward the nest and then flew the rest of the way. It made a short visit to the leaf pile and, *c.*15 minutes later, made three buoyant flights over a circular route, which brought it back to the nest. At 36 minutes after sunset, I detected an adult overhead and the young warbled. The adult landed and I identified it as the female using the torch, causing the bird to flush to a dry branch near the top of the favoured bush *c.*10 m east of the nest and closer to me, without

Captions to figures on opposite page:

Figure. 1. Male Roraiman Nightjar *Caprimulgus whitelyi*, showing buff undertail-coverts and long white spots on inner webs of middle rectrices, El Paují, Bolívar, Venezuela, 2008 (Anthony Crease)

Figure 2. Male Roraiman Nightjar *Caprimulgus whitelyi* returning to egg after being flushed, El Paují, Bolívar, Venezuela, 2008 (Anthony Crease)

Figure 3. Male Roraiman Nightjar *Caprimulgus whitelyi* with egg, El Paují, Bolívar, Venezuela, 2008 (Anthony Crease)

Figure 4. Female Roraiman Nightjar *Caprimulgus whitelyi* (soon after hatching of chick); note small spot in fanned tail, El Paují, Bolívar, Venezuela, 2008 (Mathias Gonzales)

Figure 5. Hatchling Roraiman Nightjar *Caprimulgus whitelyi*, when one-hour-old, El Paují, Bolívar, Venezuela, 2008 (Mathias Gonzales)

Figure 6. Male Roraiman Nightjar *Caprimulgus whitelyi* with 11-day-old chick, El Paují, Bolívar, Venezuela, 2008 (Anthony Crease)

Figure 7. Fledgling Roraiman Nightjar *Caprimulgus whitelyi* at 36 days old, El Paují, Bolívar, Venezuela, 2008 (Anthony Crease)

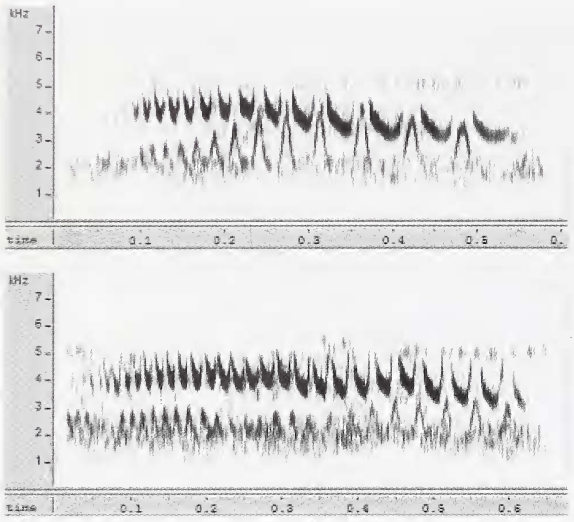

Figure 8. Sonogram depicting begging 'warbles' of fledgling Roraiman Nightjar *Caprimulgus whitelyi*, recorded at El Paují, Bolívar, Venezuela, 19 April 2008. Recorded by Anthony Crease using Olympus Digital Voice Recorder WS-331M with built-in microphone (sample rate 44,100 Hz, frequency range 50 to 13,000 Hz). Recording converted from .wma format to .wav format (sample size: 16 bit, bit rate: 352 kbps, sample rate: 22050 Hz) using iTunes software. Sonograms created using Wavesurfer software.

providing food. Five further visits by the adult occurred within the next ten minutes, mostly flights between the low bush and the nest and back, as if the bush was being used as a staging and surveillance post, which facilitated reaching the chick via the intervening clear area most expeditiously. Once I saw the adult in hovering flight for *c*.5 seconds, prior to alighting on the dry branch, with the wings held high and beating quickly. I presume that food was provided during each of the five visits, but I could not observe any details and was loath to use my torch. The number of feeds in the first feeding session of the night is similar to the 4–5 reported for Lyre-tailed Nightjar (Greeney & Wetherwax 2005). Six more or less long bouts of warbling were recorded on analysing my recording subsequently, corresponding to the initial and five successful feeding visits. It seems that the young begs by warbling each time it detects an adult nearby. The first bout of warbling lasted 36 seconds and included 16 warbles (Fig. 8). The longest and strongest warble was 0.55 seconds long and comprised 17 notes, reaching peak volume in the second half. The last bout (before I retired at 19.02 h) included only a single warble, presumably reflecting reduced hunger. This night, the young remained at the nest throughout, even when I retrieved my recorder from 80 cm above its head.

Day 35.—I left my recorder hanging over the nest at 17.30 h, withdrew and retrieved it at 19.20 h. On my first visit I spotted the fledgling, which did not flush, *c*.8 m north of the nest. At 19.20 h it was directly below my recorder; neither adult was seen. Strong warbling was recorded at 18.26 h (44 minutes after sunset), presumably when an adult first arrived. Twelve warbles were given in the space of 32 seconds, and 2.5 minutes later a single warble was uttered, probably signalling the second arrival of an adult with food. Surprisingly, no more warbling was recorded. Next day, 22 April 2008 (day 36), I took the last photographs of the fledgling, at 14.15 h (Fig. 7). On 23 April, the birds had abandoned the site and were not seen subsequently.

The pattern that emerges is that the parents fed the fledgling (and presumably the chick also) when it is dark, not in the crepuscular period, i.e. from 20 minutes after sunset on a dark, cloudy night to 45 minutes after sunset, and that the fledgling becomes active c.20 minutes before the commencement of feeding and moves some distance (up to 10 m), from the day roost to the hatching site, before a parent arrives with food.

Vocalisations

Apart from the begging warbles of the young, a few similar warbles or churrs were given by the adults on flushing and a few *cheeps* by the male on arriving to feed the fledg-

ling and finding me present, but no other vocalisations were heard during the entire seven weeks. In particular, during my dawn visits, I heard nothing similar to the dawn vocalisation recorded in Guyana for *C. whitelyi* (O'Shea *et al.* 2007). It is probably that the birds are quiet when breeding, presumably to avoid drawing attention to their presence.

Plumage of fledgling

At 36 days old the fledgling's wings still extended just beyond the tip of the tail, compared to the adult in which the tail extends 0.5–1.0 cm beyond the wingtips. Fledgling plumage is highly cryptic with no visible white (Fig. 7). Base colour of all feathers is dark brown, darkest on the mantle, tipped, scaled and barred pale grey, buff and rufous. The breast and belly are covered by a dense 'apron' of dark-brown feathers with greyish- and buffy-white tips, producing a barred effect, and overlapping the leading edge of the closed wing. The undertail-coverts are buff.

Discussion

My observations confirm that the lower altitudinal limit of Roraiman Nightjar is lower (to below 900 m) than previously stated in the literature. Similarly, its habitat is confirmed to include savannas near forest, with grass and bushes. My observations have all been in areas of *Bonnetia sessilis*. It is probable that further details of the species' breeding could be established by a more intrusive approach to observation. However, for this first study, I was careful to minimise disturbance to obtain the general pattern of behaviour during an uninterrupted breeding cycle, and to avoid discouraging reuse of the site.

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